

REMARKS

In view of the foregoing amendments and the following remarks, reconsideration and allowance are respectfully requested.

Claims 1-19 are pending. Claims 12-15 have been allowed. Claims 3-6, 18 have been objected to, but would be allowable if rewritten in independent form to include the limitations of the base claim and intervening claims. Claims 1, 2, 7-11, 16, 17 and 19 stand rejected.

Claims 1, 2 and 7-11 stand rejected under 35 U.S.C. 102(e) as allegedly being anticipated by Zhou et al (US Patent 6,787,749). This contention is respectfully traversed.

Claims 16, 17 and 19 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Hasegawa et al. (US Patent 5,917,620) in view of Antonelli et al (US Patent 6,259,108). This contention is respectfully traversed.

Claims 3-6, 18 have been amended in independent form to include all of the limitations of the base claim and intervening claims. Allowance of Claims 3-6, and 18 is respectfully requested.

Claim 1

Claim 1 is patentable over Zhou at least because Zhou fails to disclose each and every feature of the claim. For a claim to be anticipated by the prior art, it is necessary that a single prior art reference disclose each element of the claim under consideration. *Minnesota Mining and Mfg. Co. v. Johnson & Johnson Orthopedics, Inc.*, 976 F.2d 1559, 1565 (Fed. Cir. 1992).

Zhou discloses "a sensor array for receiving input signals, a frame memory array for temporarily storing a full frame, and an array of self-calibration column integrators for uniform

column-parallel signal summation" (Zhou: Abstract). However, Claim 1 teaches an imaging device including "a photosensing array" and "an integrator array ... wherein integrators of each column are coupled to receive electrical pixel signals in said photosensing array." Therefore, Zhou discloses that electrical pixel signals are stored in a frame memory array and the integrators receive the signals from the frame memory array (Zhou: Col. 2, lines 34-42; Fig. 1A; Col. 3, lines 33-62). In contrast, Claim 1 recites receiving signals from the photosensing array, and not from a frame memory array.

The above-mentioned differences between Zhou and Claim 1 are supported in the current disclosure. For example, Fig. 1B of the current disclosure shows that an APS array 110 is coupled to an integrator array 120 (for example, page 7, lines 11-21; page 9, lines 14-24; page 10, lines 1-5). However, Fig. 1A of Zhou shows that the APS array 110 is coupled to a column buffer 120, and the column buffer 120 is coupled to a frame memory array 130 (Zhou: Col. 3, lines 33-62).. The frame memory array 130 is then coupled to the column integrator. Hence, Zhou discloses that an electrical pixel signal should travel through a frame memory array prior to reaching the column integrator.

Furthermore, Zhou fails to disclose "an integrator array of a plurality of integrators arranged in rows and columns respectively equal to said rows and columns of said photosensing array" (Disclosure: Support for Claim 1 shown in Figs. 1B and 1C and related description). Zhou does not disclose that there is a one-to-one correspondence between the "plurality of integrators arranged in rows and columns" and the "rows and columns of said photosensing array" as recited in Claim 1.

Therefore, each and every limitation of Claim 1 is not shown in Zhou. For at least this reason, the Applicants

respectfully submit that Claim 1 is patentable over Zhou and the rejection under 35 U.S.C. 102 should be withdrawn.

Claims 2, 7-11

Claims 2, 7-11 are allowable because they each depend upon an allowable base claim (base Claim 1). Claims 2, 7-11 are also allowable for reciting patentable subject matter in their own right.

Claim 16

Claim 16 is allowable over Hasegawa and Antonelli at least because the cited references would render the invention unsuitable for its intended purpose. If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification (MPEP 2143).

Antonelli teaches an optical image apparatus with a contact image sensor (Antonelli: Abstract). Antonelli teaches that the contact image sensor can have a linear array optical sensor and can have light sensing pixels with CCD pixels, CMOS APS pixels, or photo-diode pixels (Antonelli: Abstract). Hasegawa teaches "an image reading apparatus comprising plural line sensors for converting light from an object into image signals" and "charge transfer unit for transferring the image signals" (Hasegawa: Abstract). The image sensor of Hasegawa uses "so called TDI (time delay and integraton)" based on transferring charges between CCD shift registers to output units (Hasegawa: Col. 2, lines 56-67; Col. 3, lines 1-40).

However, Claim 16 recites that by "using a linear sensing array" the captured radiation is internally converted in each pixel "into an electrical pixel signal". Claim 16 also recites that a "linear integrator array of integrators" is coupled to

"the sensing array to sample multiple frames of images of the object generated by the sensing array." Therefore, Claim 16 does not use CCDs because the captured radiation is already converted into an electrical pixel signal within the sensing array itself. Instead of an accumulated charge being sent out of the sensing array via CCD shift registers, an active electrical signal pixel is sent out of the sensing array and into the integrators. As supported in the current disclosure "hence, distinctly different from a charge coupled device (CCD) or a metal oxide semiconductor (MOS) diode array, an APS device does not transfer charge from one pixel to another for readout" and "the APS can convert the photocharge to an electronic signal prior to transferring the signal to a common conductor that conducts the signals to an output node" (Current disclosure: page 2, lines 10-16). Therefore, using CCDs would render the invention unsuitable for its intended purpose, and Claim 16 is patentable over Antonelli and Hasegawa.

Although Antonelli suggests using CMOS APS pixels, there is no suggestion or teaching in neither Antonelli nor Hasegawa on how to combine an active electrical pixel signal generated within the sensing array (not an accumulated charge transfer out of the sensing array) to "sample multiple frames of images of the object generated by the sensing array" by "coupling a linear array of integrators to the sensing array" as recited in Claim 16. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art (MPEP 2143). Furthermore, The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art

also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Here, the cited references do not suggest the desirability of the suggested resultant combination.

For at least these reasons, Claim 16 is distinctly patentable over Antonelli and Hasegawa.

Claims 17 and 19

Claims 17 and 19 are allowable because they each depend upon an allowable base claim (base Claim 16). Claims 17 and 19 are also allowable for reciting patentable subject matter in their own right.

Conclusion

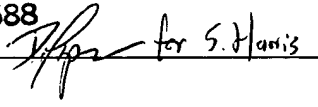
In view of the amendments and remarks herein, the Applicants believe that Claims 1-19 are in condition for allowance and ask that these pending claims be allowed. The foregoing comments made with respect to the positions taken by the Examiner are not to be construed as acquiescence with other positions of the Examiner that have not been explicitly contested. Accordingly, Applicants' arguments for patentability of a claim should not be construed as implying that there are not other valid reasons for patentability of that claim or other claims.

Enclosed is a check for \$1000.00 for excess claim fees.
Please apply any other charges or credits to Deposit Account
No. 06-1050.

Respectfully submitted,

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Drawings:

Attached are 9 sheets of replacement drawings